



# Healthy Muscles Matter

## Basic facts about muscles

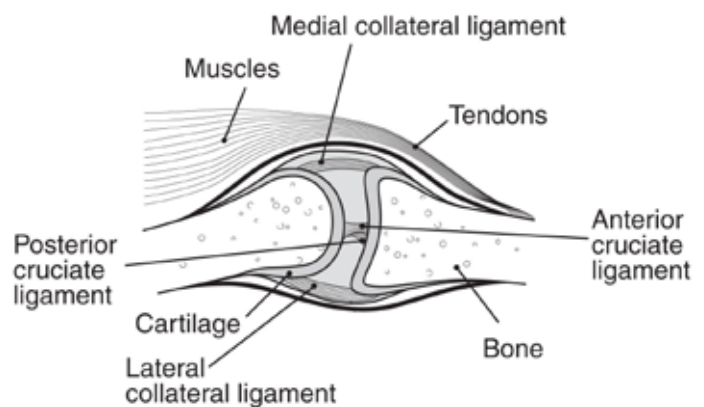
Did you know you have more than 600 muscles in your body? These muscles help you move, lift things, pump blood through your body, and even help you breathe.

When you think about your muscles, you probably think most about the ones you can control. These are your voluntary muscles, which means you can control their movements. They are also called skeletal (SKEL-i-tl) muscles, because they attach to your bones and work together with your bones to help you walk, run, pick up things, play an instrument, throw a baseball, kick a soccer ball, push a lawnmower, or ride a bicycle. The muscles of your mouth and throat even help you talk!

Keeping your muscles healthy will help you to be able to walk, run, jump, lift things, play sports, and do all the other things you love to do. Exercising, getting enough rest, and eating a balanced diet will help to keep your muscles healthy for life.

## Different kinds of muscles have different jobs

- **Skeletal** muscles are connected to your bones by tough cords of tissue called tendons (TEN-duhns). As the muscle contracts, it pulls on the tendon, which moves the bone. Bones are connected to other bones by ligaments (LIG-uh-muhnts), which are like tendons and help hold your skeleton together.



*A joint showing muscles, ligaments, and tendons. (Representation)*

## Muscles of the Arm



- **Smooth** muscles are also called involuntary muscles since you have no control over them. Smooth muscles work in your digestive system to move food along and push waste out of your body. They also help keep your eyes focused without your having to think about it.
- **Cardiac** (KAR-dee-ak) muscle. Did you know your heart is also a muscle? It is a specialized type of involuntary muscle. It pumps blood through your body, changing its speed to keep up with the demands you put on it. It pumps more slowly when you're sitting or lying down, and faster when you're running or playing sports and your skeletal muscles need more blood to help them do their work.

## Why healthy muscles matter to you

Healthy muscles let you move freely and keep your body strong. They help you to enjoy playing sports, dancing, walking the dog, swimming, and other fun activities. And they help you do those other (not so fun) things that you have to do, like making the bed, vacuuming the carpet, or mowing the lawn.

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Strong muscles also help to keep your joints in good shape. If the muscles around your knee, for example, get weak, you may be more likely to injure that knee. Strong muscles also help you keep your balance, so you are less likely to slip or fall.

And remember—the activities that make your skeletal muscles strong will also help to keep your heart muscle strong!

## What can go wrong?

### *Injuries*

Almost everyone has had sore muscles after exercising or working too much. Some soreness can be a normal part of healthy exercise. But, in other cases, muscles can become strained. Muscle strains can be mild (the muscle has just been stretched too much) to severe (the muscle actually tears). Maybe you lifted something that was too heavy and the muscles in your arms were stretched too far. Lifting heavy things in the wrong way can also strain the muscles in your back. This can be very painful and can even cause an injury that will last a long time and make it hard to do everyday things.

The tendons that connect the muscles to the bones can also be strained if they are pulled or stretched too much. If ligaments (remember, they connect bones to bones) are stretched or pulled too much, the injury is called a sprain. Most people are familiar with the pain of a sprained ankle.



Contact sports like soccer, football, hockey, and wrestling can often cause strains. Sports in which you grip something (like gymnastics or tennis) can lead to strains in your hand or forearm.

## How do I keep my muscles healthy?

### Physical Activity

When you make your muscles work by being physically active, they respond by growing stronger.

They may even get bigger by adding more muscle tissue. This is how bodybuilders get such big muscles, but your muscles can be healthy without getting that big.



There are lots of activities you can do to for your muscles. Walking, jogging, lifting weights, playing tennis, climbing stairs, jumping, and dancing are all good ways to exercise your muscles. Swimming and biking will also give your muscles a good workout. It's important to do different kinds of activities to work all your muscles. And any activity that makes you breathe harder and faster will help exercise that important heart muscle as well!

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**Get at least  
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activity  
every day.**

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Get 60 minutes of physical activity every day. It doesn't have to be all at once, but it does need to be in at least 10-minute increments to count toward your 60 minutes of physical activity per day.

### Eat a healthy diet

You really don't need a special diet to keep your muscles in good health. Eating a balanced diet will help manage your weight and provide a variety of nutrients for your muscles and overall health. A balanced diet:

- Emphasizes fruits, vegetables, whole grains, and fat-free or low-fat dairy products like milk, cheese, and yogurt.
- Includes protein from lean meats, poultry, seafood, beans, eggs, and nuts.
- Is low in solid fats, saturated fats, cholesterol, salt (sodium), added sugars, and refined grains.

- Is as low as possible in *trans* fats.
- Balances calories taken in through food with calories burned in physical activity to help maintain a healthy weight.

As you grow and become an adult, iron is an important nutrient, especially for girls. Not getting enough iron can cause anemia (uh-NEE-me-uh), which can make you feel weak and tired, because your muscles don't get enough oxygen. This can also keep you from getting enough activity to keep your muscles healthy. You can get iron from foods like lean beef, chicken, and turkey; beans and peas; spinach; and iron-enriched breads and cereals. You can also get iron from dietary supplements, but it's always good to check with a doctor first.

Some people think that supplements will make their muscles bigger and stronger. However, supplements like creatine can cause serious side effects, and protein and amino acid supplements are no better than getting protein from your food. Using steroids to increase your muscles is illegal (unless a doctor has prescribed them for a medical problem), and can have dangerous side effects. No muscles-building supplement can take the place of good nutrition and proper training.

For more information on a healthy diet, see [www.choosemyplate.gov/food-groups](http://www.choosemyplate.gov/food-groups).



### Prevent injuries

To help prevent sprains, strains, and other muscle injuries:

- **Warm up and cool down.** Before exercising or playing sports, warm-up exercises, such as stretching and light jogging, may make it less likely that you'll strain a muscle. They are called warm-up exercises because they make the muscles warmer—and more flexible. Cool-down exercises loosen muscles that have tightened during exercise.
- **Wear the proper protective gear** for your sport, for example pads or helmets. This will help reduce your risk for injuring your muscles or joints.



- Remember to **drink lots of water** while you're playing or exercising, especially in warm weather. If your body's water level gets too low (dehydration [dee-hahy-DREY-shun]), you could get dizzy or even pass out. Dehydration can cause many medical problems.
- Don't try to "play through the pain."** If something starts to hurt, STOP exercising or playing. You might need to see a doctor, or you might just need to rest the injured part for a while.
- If you have been inactive, **"start low and go slow"** by gradually increasing how often and how long activities are done. Increase physical activity gradually over time.
- Be careful when you lift heavy objects.** Keep your back straight and bend your knees to lift the object. This will protect the muscles in your back and put most of the weight on the strong muscles in your legs. Get someone to help you lift something heavy.

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### Start now

Keeping your muscles healthy will help you have more fun and enjoy the things you do. Healthy muscles will help you look your best and feel full of energy. Start good habits now, while you are young, and you'll have a better chance of keeping your muscles healthy for the rest of your life.

### Definitions

**Anemia** (uh-NEE-me-uh) is a condition in which your blood has a lower than normal number of red blood cells.

**Atrophy** (A-truh-fee). Wasting away of the body or of an organ or part, as from deficient nutrition, nerve damage, or lack of use.

**Cardiac** (KAR-dee-ak) **muscle**. The heart muscle. An involuntary muscle over which you have no control.

**Dehydration** (dee-hahy-DREY-shun). A condition that occurs when you lose more fluids than you take in. Your body is about two-thirds water. When you get dehydrated, it means the amount of water in your body has dropped below the level needed for normal body function.

**Involuntary muscle**. Muscles that you cannot control.

**Ligament** (LIG-uh-muhnt). Tough cords of tissue that connect bones to other bones at a joint.

**Skeletal** (SKEL-i-tl) **muscle**. Muscles that attach to bones.

**Sprain** (spreyn). A stretched or torn ligament. Ankle and wrist sprains are common. Symptoms include pain, swelling, bruising, and being unable to move the joint.

**Strain** (streyn). A stretched or torn muscle or tendon. Twisting or pulling these tissues can cause a strain. Strains can happen suddenly or develop over time. Back and hamstring muscle strains are common. Many people get strains playing sports.

**Tendon** (TEN-duhn). Tough cords of tissue that connect muscles to bones.

**Voluntary muscles**. Muscles that you can control.



## For more information:

For more information on muscles, contact:

**National Institute of Arthritis and Musculoskeletal and Skin Diseases (NIAMS) Information Clearinghouse**

**National Institutes of Health**

Toll free: 877-22-NIAMS (226-4267)

Email: NIAMSinfo@mail.nih.gov

Website: [www.niams.nih.gov](http://www.niams.nih.gov)

## Check out these websites:

**For information about sports injuries and sprains and strains, visit:**

- **Handout on Health: Sports Injuries:** [www.niams.nih.gov/Health\\_Info/Sports\\_Injuries/default.asp](http://www.niams.nih.gov/Health_Info/Sports_Injuries/default.asp)
- **Questions and Answers about Sprains and Strains:** [www.niams.nih.gov/Health\\_Info/Sports\\_Injuries/default.asp](http://www.niams.nih.gov/Health_Info/Sports_Injuries/default.asp)
- **MedlinePlus: Sprains and Strains:** [www.nlm.nih.gov/medlineplus/sprainsandstrains.html](http://www.nlm.nih.gov/medlineplus/sprainsandstrains.html)

**For information about physical activity, visit:**

- **Centers for Disease Control and Prevention: Physical Activity Guidelines:** [www.cdc.gov/physicalactivity/everyone/guidelines/children.html](http://www.cdc.gov/physicalactivity/everyone/guidelines/children.html)

- **Healthfinder.gov: Physical Activity:** [www.healthfinder.gov/prevention/ViewTopic.aspx?topicID=22&areaID=5&TopicContentID=258](http://www.healthfinder.gov/prevention/ViewTopic.aspx?topicID=22&areaID=5&TopicContentID=258)
- **President's Council on Fitness, Sports, & Nutrition:** [www.fitness.gov](http://www.fitness.gov)
- **Kids.gov: Health, Fitness, and Safety:** [www.kids.usa.gov](http://www.kids.usa.gov)

**For information about a balanced diet, visit:**

- **ChooseMyPlate.gov:** [www.choosemyplate.gov/food-groups](http://www.choosemyplate.gov/food-groups)
- **Healthfinder.gov: Eat Healthy:** [www.healthfinder.gov/prevention/ViewTopic.aspx?topicID=21&areaID=5&TopicContentID=106](http://www.healthfinder.gov/prevention/ViewTopic.aspx?topicID=21&areaID=5&TopicContentID=106)

This fact sheet was made for you by the National Institute of Arthritis and Musculoskeletal and Skin Diseases (NIAMS), a part of the U.S. Department of Health and Human Services' National Institutes of Health. For more information about the NIAMS, call the information clearinghouse at 301-495-4484 or toll free at 877-22-NIAMS (226-4267) or visit the NIAMS website at [www.niams.nih.gov](http://www.niams.nih.gov).



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